Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of:

Co-channel Protection	)	
Criteria for Part 90,	)	PR Docket No. 93-60
Subpart S Stations	)	RM-8028
Operating above 800 MHz	)	

To: The Commission

REPLY COMMENTS OF SOUTHERN CALIFORNIA GAS COMPANY

1. These Reply Comments concerning PR Docket No. 93-60 are filed by Southern California Gas Company ("SCG"). SCG is a transporter and supplier of natural gas and related products and services to approximately 4.5 million consumers located within the southern one-half of the state of California. SCG has been a licensee of the Commission in various Private Land Mobile Radio Service ("PLMRS") Services for more than 30 years. Presently SCG holds licenses in the Power Radio, Industrial/Land Transportation ("I/LT") and Business Radio Services (47 Code of Federal Regulations Part 90), as well as numerous stations in the Private Microwave Service (47 Code of Federal Regulations Part 94). SCG operates a very large private fleet of field service vehicles in the conduct of its operations. Approximately 3000 of these vehicles utilize PLMRS equipment and communications. Much of SCG's present vehicular

communications occur on the PLMRS 800 and 900 frequency bands, which are the central focus of the instant Docket. SCG therefore has a direct major interest in these proceedings.

2. SCG has filed extensive Comments in support of RM-8028, which Petition forms the basis for the instant NPRM.[1] SCG incorporates by reference its RM-8028 Comments into this response.

SCG FULLY SUPPORTS THE ADOPTION OF THE 40/22 DBU STANDARD FOR ALL SUBPART S STATIONS

3. Having developed the experience of operating 800 and 900 MHz PLMRS stations in one of the most difficult and most technically challenging radio environments within the United States,[2] the southern California "radio region," SCG well comprehends the value in the adoption of a 40/22 dBu co-channel overlap standard. Moreover, SCG fully endorses its adoption as the standard for all Part S stations.

4. On the basis of its operating experience, SCG believes that the loss of the small amount of additional co-channel capacity existing under the present 40/30 dBu criterion will be made up many times over by diminishment, and perhaps almost total elimination, of short-spacing interference disputes and "paper engineering wars," after the 40/22 dBu standard is adopted. SCG has been witness to several attempted abuses of coordination process under the present Rules, which abuses have been costly and time-consuming to reverse. It is, SCG firmly believes, time to adopt a standard which is clear, consistent with current communications engineering practice, and enforceable. The 40/22 dBu criterion is that standard.

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[1] vide Docket at Footnotes 7, 15, and 21.

[2] And, perhaps realistically, anywhere in the world.

5. SCG wishes to re-emphasize a point first raised in its RM-8028 Comments. Mobile data transmission radio systems, whether the digital data is transmitted as the primary dispatch traffic on the network or as secondary, in-band signaling,[3] are especially intolerant of co-channel, non-network signals. It is SCG's belief that, during the course of the next ten years, the mobile data format will become dominant in the PLMRS.[4] It is therefore all the more important that unwanted co-channel signal protection margins be maintained. The proposed criterion will do much to alleviate problems in mobile data transmission.

THE R-6602 PROPAGATION ANALYSIS MODEL MUST BE REPLACED

6. SCG believes that (and prepares its own internal system coverage area prediction analyses with) a variant of the Longley-Rice/Technote 101 propagation model provides a far more accurate propagation model than do the R-6602 curves. SCG hypothesizes that the use of the R-6602 curves would have already been discontinued by the telecommunications industry except for their continued acceptance by the Commission for engineering showings. It is time, SCG believes, that the telecommunications world moves on to the level of Technote 101, its variants, and its eventual successors.

7. The above having been asserted, SCG recommends that the mileage separation figures proposed in the Table following #90 621(b)(4) be recalculated using the Technote 101 model.

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[3] As, for example, a means of network supervision and control, in trunked radio network systems

[4] And, without doubt, in the Public land mobile services as well. Licensees in the public services, however, typically enjoy exclusive frequency allocations within their individual service territories.

8. At the same time, SCG cautions that all propagation models remain only models -- predictive theoretical constructs of physical reality. Given the widespread availability of automated test equipment, it has now become practical to make extensive field signal/field strength measurements which themselves can be used to calibrate each model. SCG recommends that those engineering showings which are constructed from field-calibrated propagation models, to which an overall level of accuracy (in deciBels) has been assigned, be given increased weight in the coordination process.

9. Finally, SCG cautions that no propagation model can fully predict all the various propagation modes and effects which have been identified. In the final analysis, a role must be maintained in the coordination process for the accumulated past operating experience which is unique to each geographical region. Stated in a different way, no one criterion will prove

southern end of the range. Two communications sites exist, both below the crest of the range, one on the east side of the mountain range, and the other on the west side. Base stations at each site, each using directional antennae oriented toward the south, provide communications coverage to the metropolitan area.

12. Using the DHAAT concept equivalent) calculations, it can easily be shown that the bulk of the mountain ridge provides a very large degree of radio signal attenuation between the base stations along the line connecting them, and also along radials located 15° above and below that line. Nevertheless, both base stations are able to provide high signal levels to the metropolitan area. Clearly, if "short spacing" were permitted in this case, based solely upon the DHAAT calculations, a situation of mutually destructive interference would likely be produced.

13. While the above case is hypothetical, the point which it demonstrates is quite practical. In making short spacing coordinations, it is the overlap over mutually served geographical areas which must be examined, regardless of whether or not those mutually served areas lie along the line between the two proposed base stations. In recent years this concept seems to have been forgotten during various coordination actions, leading to needless time and expense to effect an eventual resolution of the proposed actions.

THE PROPOSED TECHNICAL STANDARDS ARE

INAPPROPRIATE FOR USE IN THE WESTERN UNITED STATES

14. SCG does not believe that a "uniform" set of technical operating parameters for the entire United States, regulating the spectrum above 800 MHz, is either apropos or beneficial.

Practical operating conditions in southern California[6] are very different from those in rural New England. The Commission has in part recognized these differences in recent years by authorizing additional ERP for some Part 90 stations operating from high mountains in California and Washington.[7] SCG believes that a more integrated "western regional approach" to the proposed Station Separation Table should be addressed within the instant Docket.

15. As a licensee of PLMRS 800 and 900 MHz stations in southern California, SCG finds itself with a need to cover very large land areas with voice and data signals adequate for the conduct of its business activities. SCG's service territory is approximately 22,000 square miles, and its Distribution and Customer Service activities are organized into five operating Regions. Even allowing for land areas which do not contain distribution facilities and customers (i.e., unpopulated mountainous and desert areas), it can be seen that the radio coverage areas required are large indeed. SCG contends that appreciable levels of Effective Radiated Power have been, are, and will be required to provide the requisite radio coverage.

16. SCG possesses two elements which facilitate meeting its requirements for large area radio coverage: a mobile fleet sufficiently large to justify "exclusive use" channels, and access to communications sites located atop high mountains which can provide extended operating ranges. Moreover, SCG argues, many other entities in the western United States who are eligible under the proposed "Business," "Industrial/Land Transportation," and "Public Safety" Rules categories also possess these two elements.

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[6] As well as in northern California and the larger metropolitan areas of the nation west of the Rocky Mountains

[7] Existing Rule #90.621(b)(1-3)

17. For these entities, SCG contends that the proposed antenna height and power limitations[8] are inappropriate. Moreover, the premise under which the tables have been constructed, namely co-channel reuse at 70 miles,[9] may not always be realistic in a western geographical context. For example, the radio horizon from a communications site atop a 6,000 foot mountain, assuming a 4/3 earth radius propagation model, is 109.5 miles, while the same figure for a 10,000 foot elevation site is 141 miles. SCG, as well as many other California and western U.S. licensees, operates numerous base stations from mountain top sites with elevations within these limits.

18. The Commission may well contend that systems requiring greater geographic coverage could build additional sites.[10] SCG cannot endorse this view. Additional sites to "fill in" geographical coverage multiply the amount of capital required to build or modernize a corporate communications system. These additional sites also increase system complexity, control and maintenance requirements. Furthermore, the additional sites would, in the Commission's view, be located at low elevation sites to constrain the coverage areas which they produce.[11] However, SCG's extensive private digital microwave network extends through many of the high mountain communications sites at which its PLMRS base stations are co-located. It is the availability of the SCG microwave system at its PLMRS communications sites which will permit modernization of the mobile dispatch system into a voice/data network capable

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[8] Table following proposed Rule #90.621(b)(4)

[9] Docket at #11.

[10] c.f. PR Docket No. 92-235, footnote 39.

[11] In the limit of the concept, a "cellular" PLMRS system would result.

of seamless operation across its entire service territory. Low elevation sites would necessarily not be connected to the microwave system, again because of capital considerations. Thus the Commission's proposal is unattractive in the context of many private fleet operations in the western United States.

19. SCG contends that Rules exemptions governing co-channel separations, power levels, and antenna heights must be developed for western United States eligibles. Specific attention should be given to Industrial/Land Transportation, Business, and Public Safety licensees of "exclusive use" channels who have need to operate "wide area" systems. For these system

Mt. Wilson	5680	3500
Mt. Lukens	5040	2603 .

Nevertheless, SCG has operating licenses for stations operating at the following southern California mountains:

Table 2

Mountain	Elevation, AMSL (feet)	HAAT (feet)
Crestline	5365	2175
Sunset Ridge	5260	2152
Hauser Peak	5100	2013 .

21. Clearly the mountains listed in Table 2[13] are capable of propagation ranges comparable to those in Table 1. Yet they are not accorded either the increased ERP or the extended operating ranges granted the mountains listed in Table 1. There is no discernable logic to this historical artifact; SCG contends that the instant Docket is the appropriate venue for rationalizing these inconsistencies and providing to the western United States the ability for exclusive use licensees to construct wide-area systems utilizing sufficient power from high mountain sites. SCG proposes that all exclusive-use stations west of the continental divide at

[13] And many, many more in the western United States. The mountains listed are not the highest available radio sites in southern California; some base stations are located at almost 10,000 feet AMSL.

geographical locations equivalent to those in Table 1 be afforded the ERP and co-channel separation values granted to Table 1 locations.

SUMMARY

Including the specific recommendations presented supra, SCG enthusiastically SUPPORTS the basic intent of PR. Docket No. 93-61, to wit, the adoption of a uniform 40/22 dBu co-channel spacing standard for all Subpart S stations operating above 800 MHz, and URGES its adoption.

Respectfully submitted,

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